TCP/IP OFFLOAD DEVICE
WITH REDUCED SEQUENTIAL PROCESSING

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ABSTRACT OF THE DISCLOSURE

A TCP Offload Engine (TOE) device includes a state machine that performs TCP/IP protocol processing operations in parallel. In a first aspect, the state machine includes a first memory, a second memory, and combinatorial logic. The first memory stores and simultaneously outputs multiple TCP state variables. The second memory stores and simultaneously outputs multiple header values. In contrast to a sequential processor technique, the combinatorial logic generates a flush detect signal from the TCP state variables and header values without performing sequential processor instructions or sequential memory accesses. In a second aspect, a TOE includes a state machine that performs an update of multiple TCP state variables in a TCB buffer all simultaneously, thereby avoiding multiple sequential writes to the TCB buffer memory. In a third aspect, a TOE involves a state machine that sets up a DMA move in a single state machine clock cycle.